Old Growth Report
for
Southern HDs Landscape Restoration Project
Environmental Assessment

Columbine Ranger District
San Juan National Forest
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Background

This Old Growth Report was prepared in response to public comments that were received during the comment period on the pre-decisional draft Environmental Assessment (EA) for the Southern HDs Landscape Restoration Project; it will more formally document analysis had been done prior to release of the draft EA and respond to old growth-related comments.

Forest Plan Direction for Old Growth Vegetation & Recruitment

The following direction is found in the *San Juan National Forest (SJNF) Land and Resource Management Plan*, as amended.

Desired Conditions, Forest-Wide

2.2.7 – Old growth ponderosa pine, old growth pinyon-juniper, and old growth warm-dry mixed conifer forests are more abundant, occupy more acreage, and are well distributed on SJNF lands.

2.2.22 – Ponderosa pine, warm-dry mixed conifer, and cool-moist mixed conifer forest stands that are in the old growth development sage and that have not been previously harvested are managed for their old growth values through active or passive management.

Table 2.2.1: Desired Conditions for Development Stages on the San Juan National Forest (excerpt)

Terrestrial Ecosystem	Development Stage	Structural Stage*	Current Condition NFS Lands (% of Veg type)	Desired Condition NFS Lands (% of veg type)	Historic Range of Variation (% of veg type)	Current % of Veg Type in Old Growth**	Desired % of Veg Type in Old Growth**
Ponderosa pine forest	Young	2	0	5–10	1–14	4.30%	10-15%
	Mid-open	3a	3	5–10	4–14		
	Mid-closed	3b, c	2	5–10	4–14		
	Mature-open	4a	42	40–60	#		
	Mature-	4b,c	53	15–25	#		
Warm-dry mixed conifer forest	Young	2	0	5–10	1–10	13.10%	20–30%
	Mid-open	3a	1	5–10	5–14		
	Mid-closed	3b,c	6	5–10	5–14		
	Mature-open	4a	11	35–45	#		
	Mature-closed	4b,c	82	15–25	#		
* 2, 3, and 4 refer to tree size (diameter at breast height [dbh]): 2 = <1 inch dbh; 3 = 1-8.99 inches dbh; 4 = >9 inches dbh; a, b, and c refer to tree crown closure percent in a stand: a= <40%; b= 40-70%; c= >70%							
** Old growth inclusions may be found in various habitat structural stages within each vegetation type.							
# = no data available							

Desired Conditions Specific to the HD Mountains

3.25.17 – Natural resources unique to the area (including old growth ponderosa pine forests) are effectively protected and managed in conjunction with other actions.

3.25.20 – Management activities avoid disturbance to old growth vegetation. Prescribed fire may be used in old growth vegetarian areas after site-specific field review and documentation of analysis and affirmative decision is completed.

Objectives

There are no objectives related to old growth.

Standards

There are no standards related to old growth.

Guidelines, Forest-Wide

2.2.74 - Prior to any proposed agency actions on forested lands or woodlands, the affected stands should be screened against the current SJNF old growth database in order to determine their old growth status. Within landscapes not meeting desired conditions for old growth, ponderosa pine forest stands and mixed conifer forest stands that currently are not in the old growth development stage, but that contain significant old growth attributes should be prioritized as old growth recruitment areas, largely based on tree age and distribution across the SJNF, and managed for their old growth values.

Project-Specific Design Elements for Treatments in Identified Old Growth

In addition to the above guidance found in the Forest Plan, as a result of comments received, the following site-specific design elements were added to the proposed action in the final EA to provide clarification on activities to be undertaken in old growth.

- *No mechanical thinning or mastication will be used within old growth stands or Colorado Roadless Areas.*
- *Hand thinning will be used where needed to prepare old growth stands for prescribed fire.*

Old Growth Status and Current Conditions in the Analysis Area

The attached figure shows where existing inventories have mapped old growth in the HD mountains. Known acres of old growth and known percentages of old growth in each vegetation type are shown in the following table. Data for the Southern HDs project area is compared to data for the entire HD Mountains. Within the project area, most of the mapped old growth is ponderosa pine (1234 acres), with a couple stands of warm-dry mixed conifer (123 acres), and one stand of piñon-juniper (17 acres). Mechanical treatment units were proposed in the draft EA which overlapped with old growth stands in the Turkey Creek area; these units were removed from the proposed action in the final EA. Old growth inventories in the HDs have been conducted for several decades, with the most recent inventories being completed as part of the 2013 Forest Plan revision process. Many areas in the HDs have not been inventoried, but all proposed mechanical treatment units have been inventoried.

The Forest Plan desired percentage of ponderosa pine in old growth is 10-15% of all ponderosa pine forests across SJNF administrative lands (See Table 2.2.1 above). The Forest Plan states that are is currently 4.3% of ponderosa pine forests in old growth status forest-wide (from 2013 Inventory). When compared to the forest-wide percentage, the HDs as a whole are closer to the desired condition at 6.6%, and the project area is meeting the desired condition, having 13.6%. See the table below.

For warm-dry mixed conifer old growth, the desired condition in old growth is 20-30%. The forest had 13.1% forest-wide in 2013. The HDs as a whole have a lower percentage than forest-wide at 6.5%, and the project area has 5.0%.

Local Vegetation Type	SHDLR: old growth acres	SHDLR: percent of veg type in old growth	HDs: old growth acres	HDs: percent of veg type in old growth
Ponderosa Pine	1234	13.6%	1234	6.6%
Warm Dry Mixed Con	123	5.0%	331	6.5%
Piñon Juniper	17	0.1%	17	0.1%
Cool Moist Mixed Con	2	0.2%	189	14.6%
Aspen	0	0%	51	8.2%
Total	**1376**		**1822**	

The following discussion concentrates on the ponderosa pine type because it is the old growth vegetation type most likely to be affected by the proposed action. Other vegetation types of mapped old growth are inaccessible in the roadless area, and prescribed burning would be focused on the ponderosa type.

Clarifications and Justifications for Proposed Actions in Old Growth vegetation

The SJNF old growth inventory was analyzed for this project as per Forest Plan direction. In addition, identified old growth vegetation areas would be analyzed in the field prior to individual activity implementation, and hand thinning treatments would be prescribed if stand conditions warrant it.

The identified Goose Creek/Turkey Creek old growth stands have experienced significant in-growth of Gambel oak and piñon/juniper saplings and intermediate sized trees. Under these current vegetative conditions, prescribed fire activities could create moderate to high intensity fire effects, and hand thinning would be required first to align these stands to conditions that fit within allowable prescribed burning conditions.

The remainder of identified old growth vegetation falls within the roadless area or is located in variable terrain inaccessible from system roads. Hand thinning could be a necessary activity to meet broader prescribed fire and landscape management objectives in those areas as well. Hand thinning would only be utilized in areas where ladder fuel components put mature and dominant old trees at risk.

Old growth recruitment of dominant ponderosa pine was analyzed by the District Silviculturist as part of this planning effort. The entirety of the roadless area is being managed for the recruitment of old growth trees since we are deferring mechanical treatments in those areas and with that, we would not be prescribing regeneration harvests or any other silvicultural method that would focus on harvesting dominant or co-dominant ponderosa pine. This would

allow stands that currently do not meet old growth definition to continue maturing and moving towards becoming old growth.

Old growth recruitment is not a focus in areas outside of roadless or outside of identified old growth stands. Proposed treatment units in Spring Creek and off of County Road 523 (See Figure) would potentially include mechanical tree harvest, but treatments would be in the form of improvement harvests and thin-from-below treatments, which are intermediate treatments. As such, while old growth recruitment is not a target in these areas, these types of treatments do not focus on the removal of dominant ponderosa pine and would generally retain the primary targets for old growth recruitment.

A single old tree does not make an old forest. Even a scattering of old trees does not necessarily define an old-growth stand. Old growth is a stand condition that develops over time. Old-growth stands have special characteristics that result from long years of growth in the absence of stand-replacing disturbance. Old-growth forest structure varies with forest type, climate, site characteristics, and disturbance regime, but it is distinguished from younger growth by large, physiologically old (for the species and local site conditions) trees as stand dominants, variation in tree size and spacing, accumulations of dead standing and fallen trees relative to younger stands, decay, multiple canopy layers, gaps, and understory patchiness (Kaufmann et al. 1992).

Gambel oak and piñon-juniper are now occupying the gaps within old growth vegetation in the Southern HD landscape. This in-growth is dominating growing space that is generally allocated to fire- adapted ponderosa pine regeneration and other understory vegetation that is indicative of old growth stands. Suppressed and poor form advanced-intermediate and co-dominant ponderosa pine are also threating old growth ponderosa pine trees and, in some cases, even threatening dominant ponderosa pine trees. If these lower-to-middle canopy layer ponderosa pine trees are located within the drip line of the remnant or dominant trees, there is a need to hand thin that size class to help in the protection and retention of the old growth vegetation in those particular stands.

A workable definition of old growth cannot be absolute in terms of some minimum age for the trees or some maximum number of canopy layers. The characteristics that constitute old growth vary with the forest type, local site productivity, and the natural disturbance regime. However, in all old-growth stands, competition among dominant trees is minor. Senescence and mortality are important processes, since the oldest cohorts are reaching their natural longevities as determined by site and environment. Physiologically, the old trees have reached their maximum heights for the site conditions and are no longer growing taller. Their crowns are declining, and their respiration equals or exceeds their productivity. They produce secondary metabolic products that may provide some resistance to insects and diseases. In an old stand, net productivity is low, even zero or negative, as newly produced biomass is offset on average by respiration and mortality of trees or tree parts (Kaufmann et al. 1992).

Diameter is not a direct and defining associate to old growth trees. Diameters differ greatly on a stand-by-stand basis depending on site index, growing space, soil profiles, moisture regime, past disturbances, aspect, and overall stand competition. Kaufmann et al. 1992 also states that minimum age is not a direct surrogate to defining an old growth tree; therefore, tree-level

characteristics such as branch diameter, bark characteristics, flat crown, and stand position would be used to define old growth stands during site-specific implementation planning such as burn plans, thinning or service contracts, or in-house work plans.

The proposed action of managing for complexity and old growth recruitment in roadless areas will help to move the Forest towards the desired condition of 10-15%. Hand thinning and prescribed fire will also help to maintain the status of old growth structure and old trees within the landscape, and will protect them from high intensity fire while more natural fire is being re-introduced to the landscape.

Citations

Kaufmann, M.R., W.H. Moir, and W.W. Covington. (1992). Old growth forests: what do we know about their ecology and management in the Southwest and Rocky Mountain Regions? Pages 1-11 in: M.R. Kaufmann, W.H. Moir, and R.L. Basset, Technical Coordinators. Old-Growth Forest in the Southwest and Rocky Mountain Regions. Proceedings of a Workshop. March 9-13, 1992, Portal, AZ. USDA Forest Service, General Technical Report RM-213.

USDA Forest Service (2013). San Juan National Forest Land and Resource Management Plan, as amended 2021. Durango, CO.

Figure. Old Growth Report